mechanics and physics of the universe. His untiring intellectual activity has led him also to inquire into problems interesting to the chemist and geologist, as well as those which are important to the physicist and engineer. He has calculated the probable size of atoms; he has studied the structure of crystals; he has estimated the age of the earth. But the world knows him best as the man who has shown how practically to measure electrical and magnetic quantities, and has made it possible to link together distant continents by the electric telegraph. It is he who has shown how to neutralise the effects of iron on the compasses of ships and how to predict the tides, and who has thus taught the mariner to steer safely over the surface of the ocean and to sound, as he goes, its depths and shallows. A greater philosopher than Democritus, in him are united the qualities of Archimedes and Aristotle. Regarded with affectionate reverence by his contemporaries, it cannot be doubted that his name will shine brightly through long future generations. In offering a place of honour to such a man the university confers lustre on itself.

Mr. Butlin, Dean of the Faculty of Medicine, then presented Lord Lister for the honorary degree of doctor of science in the following terms:—

My Lord the Chancellor, since the reconstitution of the university, the Faculty of Medicine has been almost continuously engaged in arduous and not always pleasant work, and to-night, as if in compensation, there falls to its lot—for I am but the mouthpiece of the faculty—the agreeable task of presenting my Lord Lister for one of the four first honorary degrees of the University of London. While every person in my profession is familiar with the work which he has done, and his name has become a household word in every part of the civilised world, comparatively few persons are acquainted with the obstacles which he has overcome. It is not only that, sitting down many years ago in front of a difficult problem of pathology, Lord Lister solved the mystery which had puzzled the brains of the greatest surgeons of all time, or that he then invented a means of meeting and overcoming surgical infection, but that he stood by his theory, and fought manfully for it, until at length, in spite of opposition, of envy, of lack of faith, and even of ridicule, he succeeded in carrying conviction to the minds of his own profession and of the world at large. And all this was done, and these things were borne, not for the sake of gain—care for which has never been a part of Lord Lister's character—but for the sake of science and for the relief of human suffering. It is well-nigh impossible for those among whom a great man lives to form a just estimate of the value of his work, whether in art or in science, but I venture to predict that the name of Lord Lister will be handed down from generation to generation, from century to century, until, more than 2000 years hence, he will be acknowledged by our descendants as the father of surgery, in like manner as Hippocrates is regarded by this present generation as the father of medicine. I, therefore, sir, beg to present the Right Hon. Lord Lister, and ask you to confer on him the honorary degree of doctor of science, and I do so with the happy confidence that the addition of his name will confer lustre now and in the future on the University of London.

The students who had gained degrees in various faculties of the university were then presented in groups by the Dean of each faculty.

A CHARLOTTENBURG INSTITUTE FOR LONDON.

THE magnificent proposals which Lord Rosebery laid before the County Council in his letter to its chairman, Lord Monkswell, on June 27 have roused feelings of keen interest and high hopes in many who, for years past, have been crying, as it seemed in the wilderness, to the nation, to the Government, to public bodies, and to private individuals to do something to improve our higher technical educational methods. Generally speaking, the cry has been ignored or else met with the reply that our fathers obtained the command of the sea, extended our commerce and made the country the greatest commercial centre of the world, so surely methods which were good enough for them are good enough for us. Passing strange, but were they content with the methods of *their* fathers? did the eighteenth century show no advancement upon the seventeenth century? At the beginning of the nineteenth century we were ahead of all nations in the use of gas as an illuminant; later on, our railway systems and our steamships became the envy of the world; other nations could not approach us in engineering. In the middle of the century we were pioneers in many chemical discoveries; but then, apparently, so much prosperity and success seems to have been too rich a diet, and we waxed fat and kicked.

Of late years the country has felt more and more the competition of other nations. The colour industry has forsaken our shores, the finest electrical machinery is made abroad, we go to America for labour-saving appliances. Thinking men have cast about and tried to find a reason why other nations should take our markets; but when it was first suggested that our deficiency in scientific and technical education was at the root of the matter, those who dared to make the suggestion were, if not mocked at, at any rate treated with scant courtesy.

Now, however, it is generally admitted that, unless we improve our educational methods, we shall fall behind in the modern race for advancement to such an extent that it will require almost a miracle for us to be able to pull up again.

Our secondary education is not what it should be, but it is gradually improving. Technical education, generally speaking, has been tinkered at. The polytechnics are doing good work, but they are largely engaged in turning out better workmen and foremen workmen, or taking the place of the old apprenticeship system. Lord Rosebery now comes forward, and, through the generosity of Messrs. Wernher, Beit, and Co. (who offer 100,000*l.*) and other large business houses, is able to offer to London the means for providing higher technical education. Briefly stated, the idea put forward is to supply London with a technical college after the lines of the world-renowned polytechnic at Charlottenburg, which represents the acme of technical education. It is not for teaching the elements of this or that science; but when the foundation of a thorough education has been laid, students can go there for the building up of the superstructure. It is not an easy matter for a student to gain entrance into the Charlottenburg Institute. A very thorough examination must first be passed, in order to show that he is capable to take advantage of the instruction offered.

The Charlottenburg Institute cost more than 500,000*l.* to build and equip, and entails an annual outlay of 55,000*l.* The offer made by Lord Rosebery to the County Council is one of 300,000*l.* to build the institute, and he has reason to think that the Commissioners of the 1851 Exhibition will grant the site (some four acres of ground). The County Council is asked to contribute 20,000*l.* a year for the maintenance of the institute. This sum may be sufficient at the commencement, but will probably be inadequate as the place becomes known and its value appreciated.

Is it right that the County Council should be asked to find the money? The institute is meant to be imperial. Londoners may and will attend it; but it is hoped by the donors of the funds that students from all parts of the British Empire will flock there, and thus make London, "at any rate, so far as advanced scientific technology is concerned, the

educational centre of the Empire." Lord Rosebery considers it "little short of a scandal that our own able and ambitious young men, eager to equip themselves with the most perfect technical training, should be compelled to resort to the universities of Germany or the United States." Why, then, should London, which is already overtaxed, and has much more yet to contribute to primary and secondary education, be called upon to pay for the upkeep of this great Imperial undertaking? Are our legislators so dead to the interests of the nation that they will refuse—if asked—to support such a scheme? or to find the much larger sum which will be required for the development of London University.

Lord Rosebery has agreed to act as the first chairman of the trustees. Presumably they will appoint a committee to advise and help them in drawing up and settling the scheme. It is to be hoped that they will use every endeavour to choose the right men, men who are thoroughly conversant with the needs of the nation, and who understand what technical education is.

The institute, if properly organised and equipped, will be a national gain, a national asset; if run on wrong lines a national loss. But with the magnificent institutes in Germany to adapt from, there is really no reason why it should not be a grand success. One thing, however, should not be forgotten, a splendid equipment without an equally good curriculum and organisation is almost valueless. It must also be remembered that the scheme does not touch the question of the provision for development required by the University of London.

The scheme outlined in Lord Rosebery's letter may, we hope, be taken as a sign that our great manufacturers are becoming aware of the national advantages to be derived from an alliance between science and industry. The meeting held at the Mansion House on Monday to inaugurate a memorial to the late Sir Henry Bessemer gave additional reason for the belief that an awakening is taking place. It was decided that a memorial should be established which should not only commemorate Bessemer's work, but also provide a means of carrying it on to further achievements. The proposals of the memorial committee, which were read at the meeting on Monday, include the provision of well-equipped mining and metallurgical laboratories, and scholarships for post-graduate study in London. In the words of the committee :—

> The establishment of completely equipped metallurgical teaching and research works in London will form the first object of the memorial, for which the practical cooperation and financial aid of the industrial world is asked. The primary aim will be the thorough technical instruction of mining and metallurgical students. Metallurgical tests and research of all kinds, for which facilities are not available in Birmingham or Sheffield, will be carried out at these works, on a practical scale, by engineers and others. In this way advanced students will be afforded opportunities for the acquirement of practical knowledge and for original research which it would be difficult to obtain in any other way. The second object of the memorial will be a system of grants, in the form of scholarships, for post-graduate courses in specialised practical work in London and the great metallurgical centres.

In proposing the adoption of this form of memorial, Mr. Haldane said the work which was to be done in teaching by the Bessemer Foundation should form a part—an integral part—of the larger scheme for raising the nation's efficiency. He had reason to know that the King was fully cognisant of the details of the great scheme which was laid before the public in Lord Rosebery's letter, and that His Majesty had also been informed of the proposal to launch the Bessemer memorial scheme in connection with and as an integral part of it.

The committee's proposals were adopted, and there is little doubt that the support which will be given to them will enable provision to be made for study and research in mining and metallurgy on a scale appropriate to Bessemer's great name, and to our responsibilities as a State. To maintain a leading position among the nations of the world, industrial methods must be developed in directions indicated by scientific research, and the recognition of this fact in the scheme for the proposed Charlottenburg Institute for London, and in that of the Bessemer Memorial Committee, will give satisfaction to all who are familiar with the developments due to the application of science to industry.

THE BRITISH ACADEMY.

THE first anniversary meeting of the British Academy was held last week. We have received no report, but we learn from the *Times* that the objects of the Academy, and the studies to be fostered by it, were described in the presidential address. In the course of this address, Lord Reay remarked :—

> The Academy might be regarded as embodying the recognition on the part of England that she, too, at last recognised that history, philosophy, philology, and kindred studies call for the exercise of scientific acumen, and must take their place by the side of the sister sciences, the priestesses of nature's mysteries.

We are all anxious to extend the boundaries of knowledge by scientific study, and Lord Reay appears to have overlooked the fact that the Royal Society was founded for the purpose of promoting the progress of the subjects he mentions, among others. The first charter granted to the Royal Society in 1662 contains the following words :—

> We have long and fully resolved with Ourself to extend not only the boundaries of the Empire, but also the very arts and sciences. Therefore we look with favour upon all forms of learning, but with particular Grace we encourage philosophical studies, especially those which by actual experiments attempt either to shape out a new philosophy or to perfect the old.

The recognition of the value of the application of scientific principles to all inquiries is therefore as old as Charles II., and has not recently been discovered as Lord Reay seems to suggest.

Lord Reay remarked that it would be one of the first important duties of the Academy with the Royal Society to prepare a fitting welcome for the International Association of Academies when it meets in London next year at Whitsuntide, and to make that meeting a success. The following points from the address show some of the directions in which the Academy is to work :—

> In history we have to deal with the mutual interaction of different civilisations, and to compare these civilisations. The task of the historian is very similar to that of the explorer of nature's laws. Our colleague, Prof. Bury, in his interesting inaugural lecture, has eloquently emphasised the application of strict scientific methods to the study of history, as the study of "all the manifestations of human activity." In the department of archæological exploration an understanding might be obtained through the International Association with regard to the spheres of scientific exploration which should be allotted to various nations, so as to arrive at a systematic distribution of archæological research in the vast domain open to the explorers of different nationalities. Many questions belonging